

REMARKS

In the Office Action dated June 6, 2003, claims 12-25 have been withdrawn from consideration. Claims 1-7 also stand rejected under 35 U.S.C. §112, second paragraph. Claims 1 and 2 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,443,551 to Lionetti et al. (hereinafter "Lionetti") and by U.S. Patent No. 5,908,804 to Menon et al. (hereinafter "Menon"). Claim 3 also stands rejected under 35 U.S.C. §103 as obvious over Lionetti in view of U.S. Patent No. 3,763,380 to Robinson et al. (hereinafter "Robinson") and over Menon in view of Robinson. Finally, claims 1-7 stand rejected under 35 U.S.C. §103 as obvious over U.S. Patent No. 3,053,704 to Munday in view of Menon.

In response, Applicants amended claim 1 which when considered with the remarks set forth below are deemed to place the application in condition for allowance. Claims 1-7 are presented for continued prosecution. Reconsideration of the application is respectfully requested.

Applicants respectfully submit that the amendment of claim 1 does not introduce new matter. For example, claim 1 has been amended to now recite that the "tuyeres coupled to and mounted beneath the piping array" are in a perpendicular orientation. Support is found in Figure 4 in addition to Figure 5, which specifically shows a plan view and a side-view of the piping array of the invention. One skilled in the art upon viewing Figure 4 in combination with Figure 5 will clearly recognize that the "tuyeres" are in a perpendicular orientation. In addition, claim 1 has been amended to recite that the furnace or reactor includes "at least one door for the entry and exit of the parts." Support for the "at least one door for entry and exit of the parts" is found in Figs. 4 and 8, and in the specification at page 11, line 37 – page 13, line 18. No new matter is being added.

Rejection under 35 U.S.C. §112, Second Paragraph

Claims 1-7 stand rejected as being vague and indefinite since the Examiner finds unclear Applicants' recitation of the "tuyeres" being in a vertical elevation. The Examiner additionally notes that if "vertical elevation" is amended to "perpendicular" support will be required in addition to that shown in Fig. 4.

In response, Applicants have amended claim 1 to recite that the "tuyeres" are in a perpendicular orientation, which is additionally supported by the two (2) views in Fig. 5. Thus, Applicants submit that claim 1 is definite and clearly supported by Figs. 4 and 5. Withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. §102(b)

Claims 1 and 2 stand rejected as anticipated by Lionetti and by Menon. In response, Applicants submit that neither Lionetti nor Menon disclose a fluid-bed furnace or reactor with "tuyeres" in a perpendicular orientation. Accordingly, the rejection of claims 1 and 2 as anticipated should be withdrawn.

Rejections under 35 U.S.C. §103(a)

As noted above, claim 3 stands rejected as obvious over Lionetti in view of Robinson and over Menon in view of Robinson. Likewise, claims 1-7 stand rejected as obvious over Munday in view of Menon.

Applicants respectfully submit that claim 3 is not rendered obvious by Lionetti and Robinson or by Menon in view of Robinson. Claim 1, as amended, requires that the fluid bed reactor or furnace include "at least one door for entry and exit of the parts." As a result, dependent claim 3 also has this limitation. However, none of the cited combinations of prior art

teach or suggest a fluid bed furnace or reactor having at least one door for entry and exit of parts to be heat-treated. Withdrawal of the rejections is respectfully requested.

Applicants also respectfully submit that claims 1-7 are not rendered obvious by Munday in view of Menon since the combination does not set forth a *prima facie* case of obviousness against claim 1. As set forth in Section 2142 of the Manual of Patent Examining Procedure (M.P.E.P.), a *prima facie* case of obviousness requires three basic criteria to be met:

First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined), must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, and not on the applicants' disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991)(emphasis added).

First, one skilled in the art would not be motivated to combine the teachings of Munday with Menon since the references are directed to totally different uses and therefore different configurations of fluid bed furnaces. Munday, as with the present invention, is directed to heat-treating parts using a fluidized bed of granular solids to impinge parts immersed therein. As a result, the furnace is provided with some means for entry and exit of the parts that are to be immersed in the fluidized bed. To the contrary, Menon is directed to a regenerator for catalytic cracker catalysts where the fluidized bed is of the catalyst being regenerated. As a result, the regenerator is not provided with any means for entry and exit of parts. Thus, one skilled in the art in possession of Munday would not seek out Menon in an attempt to achieve the claimed invention.

Second, the combination of Munday and Menon even if proper fails to provide a reasonable expectation of success of achieving the benefit of heat reduction provided by the present invention. Applicants have found that by placing the “tuyeres” beneath the piping array the temperature of the fluidizing gas is reduced prior to exiting the tuyeres. See specification at page 10, line 7 - page 11, line 24. The reduction in the temperature of the fluidizing gas is caused by heat dissipating from the piping array before exiting the tuyeres. The immediate benefit of the temperature reduction is that heat damage to parts is minimized. However, when the tuyeres are amounted above the piping array (as found in the prior art) heat fails to dissipate from the piping array because the granular solids just below the exit ports of the tuyeres and surrounding the piping array are not fluidized and act as an insulator. However, Menon only teaches that mounting the tuyeres beneath the piping array provides a larger combustion zone. See Office Action at page 5, last paragraph. Munday is just irrelevant on this point. Therefore, the combination of Munday and Menon does not provide one skilled in the art with a reasonable expectation of success in lowering the temperature of fluidizing gas thereby minimizing heat damage to parts.

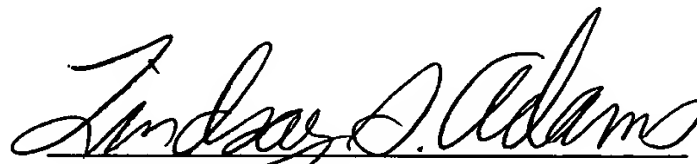
Third, the combination of Munday and Menon fails to teach or suggest a furnace or reactor including at least one door for entry and exit of parts to be heated treated. Although Munday is directed to heat-treating parts, Munday fails to disclose, teach or suggest “at least one door for entry and exit of the parts.” Likewise, Menon is just irrelevant with regard to this element of claim 1.

In view of the above, Applicants respectfully submit that the application is in condition for allowance, which action is earnestly solicited. If the Examiner has any questions regarding

the amendment, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number set forth below.

Applicants do not believe that any fees, other than the requisite fees for RCE and extension of time, are due with this amendment. However, if any additional fees are due, please charge such sums to our Deposit Account, 50-1145.

Respectfully submitted,

A handwritten signature in cursive script, reading "Lindsay S. Adams", written in black ink.

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